

*REMARKS/ARGUMENTS*

In response to the Office Action mailed August 3, 2006, Applicants amend their application and request reconsideration. No claims are added or cancelled so that claims 1, 3, and 6-10 remain pending.

Claim 7 is allowed.

In this Amendment claim 1 is amended to include the description of the first and second diffraction gratings as being complex coupled. This complex coupling is described in the patent application with regard to the Second Embodiment at page 7. Further, this amendment accepts the suggestion of the Examiner appearing at pages 2 and 3 of the Office Action. As understood from the suggestion, this claim amendment distinguishes the invention from the portion of Abe et al. (U.S. Patent 5,020,072, hereinafter Abe) that was relied upon in at least one of the rejections. Claim 1 is also amended to make clear that the light generated in the semiconductor laser actually does exit through the end surfaces. That amendment is basically grammatical in nature. The other amendments to the dependent claims are only made to make the language of the claims uniform.

Claims 1 and 8 were rejected as unpatentable over Abe in view of Lo (U.S. Patent 5,617,436). Claims 1 and 8 were also rejected as unpatentable over Abe in view of Lo and further in view of a non-patent literature publication to Lu. These rejections are respectfully traversed as to the claim 1 that is now pending.

As best understood, the first of these two rejections of claim 1 is overcome by adopting the Examiner's suggestion for the amendment of claim 1. However, some difficulty has arisen in understanding the two rejections because they inconsistently describe the Abe reference. In first of the rejections, at page 4 of the Office Action, the Examiner asserted that Abe discloses that the absolute value of the real part of the coupling coefficient is at least four times the absolute value of the imaginary part of the coupling coefficient. This statement is consistent with the explanation that

appears at pages 2 and 3 of the Office Action. However, the opposite statement is made at page 5 of the Office Action in characterizing Abe. It is presumed that the statement at page 5 is incorrect and should be inverted to be consistent with the rest of the Office Action.

As noted, the amendment of claim 1 is believed, based upon the Examiner's commentary, to overcome this portion of the rejections. As to the balance of the rejections, the rejections are traversed, because there is no motivation, contrary to the assertion of the Office Action, for the cobbling together of Abe, Lo, and Lu. In other words, even if the selected parts of those references cited in the rejection meet various limitations of the claims, *prima facie* obviousness cannot be established unless there is a motivation to combine those publications in the way hypothesized by the Examiner. That motivation is lacking.

Fundamentally, Applicants do not quarrel with the characterization of Abe that appears at pages 5 and 6 of the Office Action of Abe. However, contrary to the assertion of the Office Action, the attempted establishment of *prima facie* obviousness breaks down when it is attempted to modify Abe with Lo. Lo is directed to a substantially different kind of semiconductor laser from Abe. Therefore, Lo cannot suggest modification of the laser structure described by Abe.

Abe, like the invention, is directed to a semiconductor laser that includes opposing facets or end surfaces defining a resonator and through which light produced within the semiconductor laser escapes for use outside the laser. Lo was cited as describing semiconductor lasers with remarkably high coupling coefficients. However, Lo can only achieve those coupling coefficients by constructing an active layer that includes a strained multiple quantum well structure in a surface emitting laser (SEL). By way of explanation, referring to Figure 1 of Lo, on which the Examiner relied, the Lo semiconductor laser structure includes parallel vertical surfaces that might be considered to correspond to the end surfaces the semiconductor laser as described by claim 1. However, because the structure illustrated in Lo is an SEL, the light emission from that structure appears along the arrow 32 shown in that

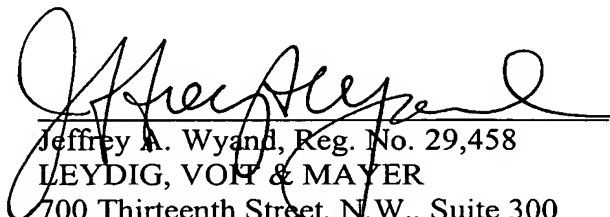
Figure 1 of Lo. See Lo at column 7, lines 37-42. Unlike the semiconductor laser of Abe and the claimed invention, that arrow 32 does not show light generated as exiting through one of the end surfaces.

Lo discusses the semiconductor laser structure described solely in terms of surface emitting lasers. See, for example, the paragraph beginning in column 5, line 46 of Lo and the particular reference to the inverse relationship between the coupling coefficient and the length of a cavity in an SEL. Further, all of the embodiments that are alternatives to the embodiment of Figure 1 of Lo are described by Lo as SELs. The considerations that pertain to the design and operation of SELs simply do not apply to the kind of semiconductor laser disclosed in Abe and disclosed and claimed in the present patent application. In those lasers the resonator is defined by the same first and second end surfaces through which light generated within the semiconductor laser is emitted. Therefore, one cannot simply extract various quantitative operational characteristics of Lo, e.g., coupling coefficients, and insert them into Abe. In other words, motivation for modifying Abe with Lo has not been established, meaning the *prima facie* obviousness, which here relies upon Lo, has not been established. Therefore, the rejections of claim 1 should be withdrawn. Further, reconsideration, Lo should be withdrawn as a reference.

Since Lo is an essential part of the rejections of claims 1 and 8, and of the other rejections of all other rejected claims, upon withdrawal of that patent, all of the other rejections likewise fail. For that reason, it is not necessary to discuss further any of the rejections of claims 3, 6, and 8-10.

Reconsideration and allowance of claims 1, 3, 6, and 8-10, in addition to the previous allowance of claim 7, are earnestly solicited.

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